

PRELIMINARY AMENDMENT
U.S. Patent Application No. 09/977,589

REMARKS

Entry and consideration of this Amendment is respectfully requested.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

First full paragraph on page 2:

(Amended)As is well known to those skilled in the art, vehicle wheels are placed under severe environment in which the temperature ranges from a low value of some tens degree Celsius to a high value in excess of 100°C and yet varies repeatedly. For this reason, in the wheel bearing assembly, the magnetized encoder 106 undergoes a considerable change in temperature affected by the environmental temperature. Considering that the magnetized encoder 106 contains not only the elastic material such as rubber or the like, but also the powder of the magnetizeable material such as, for example, ferrite and the bonding strength of the rubber as a binder is relatively low, it often occurs that under the influence of a considerable change in temperature to which the magnetized encoder 106 is repeatedly subjected, ~~fine cracking tends to occur, failing to sustain~~ the initial magnetic characteristic can not be sustained, at a satisfactory level. ~~Reduction in magnetic characteristic of the magnetized encoder 106 leads to reduction in accuracy with which the rotational speed of the vehicle wheel is detected and, therefore, a proper and normal operation of, for example, the antiskid brake system will no longer be warranted.~~

**First paragraph under Summary of the Invention at the bottom of page 2
continuing on page 3:**

(Amended) In order to accomplish these objects of the present invention, there is provided a wheel bearing assembly which includes an inner member, an outer member, at least one circumferential row of rolling elements rollingly interposed between the inner and outer members, a sealing device for sealing an annular end space defined between the inner and outer members, and a magnetized encoder mounted on one of the inner and outer members which serves as a rotary member. The magnetized encoder in turn includes an elastic member made of a base material mixed with a powder of magnetic material. The elastic member is bonded by vulcanization to the magnetized encoder and has a series of alternating magnetic poles of opposite polarities formed in a direction circumferentially of the rotary member. Under a thermal endurance test condition in which the magnetized encoder is subjected to 1,000 thermal cycles each consisting of heating at 120°C for one hour followed by cooling at -40°C for one hour, the magnetized encoder retains the following initial magnetic characteristics when ~~an air gap defined between~~ measured at a point 2.0 mm distant from the magnetized encoder: ~~and a magnetic sensor for detecting the magnetic poles thereof is 2.0 mm:~~

- * Single pitch deviation: $\pm 2\%$ or less and
- * Magnetic flux density: ± 3 mT or higher.

IN THE CLAIMS:

The claims are amended as follows:

1. ~~(Amended)~~A wheel bearing assembly which comprises:
 - an inner member;
 - an outer member;
 - at least one circumferential row of rolling elements rollingly interposed between the inner and outer members;
 - a sealing device for sealing an annular end space defined between the inner and outer members; and
 - a magnetized encoder mounted on one of the inner and outer members which serves as a rotary member and including an elastic member made of a base material mixed with a powder of magnetic material, said elastic member being bonded by vulcanization to the magnetized encoder and having a series of alternating magnetic poles of opposite polarities formed in a direction circumferentially of the rotary member;
- wherein under a thermal endurance test condition in which the magnetized encoder is subjected to 1,000 thermal cycles each consisting of heating at 120°C for one hour followed by cooling at -40°C for one hour, the magnetized encoder retains the following initial magnetic characteristics when an air gap defined between measured at a point 2.0 mm distant from the magnetized encoder; ~~and a magnetic sensor for detecting the magnetic poles thereof is 2.0 mm:~~

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Single pitch deviation: $\pm 2\%$ or less and

Magnetic flux density: ± 3 mT or higher.